R E P O R T R E S U M E S

ED 014 089 CG 000 553

EDUCATIONAL QUALITY--DEFINITION AND MEASUREMENT.
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NATIONAL CENTER FOR EDUCATIONAL STATISTICS (DHEW)
REPORT NUMBER NCES-DOA-TN-4 PUB DATE 2 SEP 66
EDRS PRICE MF-$0.25 HC-$0.44 9P.

DESCRIPTORS- MEASUREMENT, STANDARDS, EVALUATION NEEDS, *EDUCATIONAL STATUS COMPARISON, *RESEARCH CRITERIA, ACHIEVEMENT TESTS, EVALUATION METHODS, *SCHOOL IMPROVEMENT, EDUCATIONAL STRATEGIES, REPORTS, NEW YORK QUALITY MEASUREMENT PROJECT

TO MEASURE SCHOOL QUALITY, GOALS MUST FIRST BE SPECIFIED, APPROPRIATE CRITERION MEASURES DETERMINED, AND RELEVANT STUDENT AND SCHOOL CHARACTERISTICS CONTROLLED. AT PRESENT, LITTLE ATTENTION IS FOCUSED ON THE REAL EDUCATIONAL OUTPUT OF THE SCHOOL, THE LEVEL OF EDUCATIONAL ATTAINMENT OF THE STUDENT. THE SCHOOL SYSTEM SHOULD BE EVALUATED BY ITS EFFICIENCY, MEASURED IN OUTPUT PER UNIT INPUT WITHIN CLASSIFICATIONS OF SCHOOLS GROUPED ACCORDING TO SIZE, FUNDS, TYPE, AND OTHER MEANINGFUL DIVISIONS. FOR MANY EDUCATIONAL GOALS, NO SATISFACTORY INSTRUMENTS HAVE YET BEEN DEVISED. RARELY HAVE EVALUATIONS OF SCHOOLS BEEN BASED ON SOUND RESEARCH DESIGN SO THAT SENSIBLE COMPARISONS BETWEEN SCHOOLS COULD BE MADE. ONE OF THE BETTER RESEARCH STUDIES HAS BEEN THE NEW YORK QUALITY MEASUREMENT PROJECT. IN THIS STUDY, A SCHOOL'S EFFECTIVENESS IN TEACHING BASIC SKILLS, MEASURED BY STANDARDIZED ACHIEVEMENT TESTS, WAS ASSESSED BY COMPARISON WITH OTHER SIMILAR SCHOOLS. THE PROJECT TALENT DATA BANK, THE IOWA EDUCATIONAL INFORMATION CENTER, THE CARNEGIE ASSESSMENT PROJECT, AND THE PENNSYLVANIA QUALITY EDUCATION PROJECT ARE ALSO MENTIONED. IF THE RELATIVE EFFECTS OF VARIOUS ALTERNATIVES FOR IMPROVING SCHOOL QUALITY COULD BE DETERMINED, THEN DECISIONS BASED ON THE MOST EFFICIENT ALTERNATIVES WOULD GIVE US THE MAXIMUM EDUCATIONAL OUTPUT FOR DOLLAR EXPENDITURE. THIS PAPER IS NATIONAL CENTER FOR EDUCATIONAL STATISTICS TECHNICAL NOTE NUMBER 4, SEPTEMBER 2, 1966. (PS)

ED014089

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NATIONAL CENTER FOR EDUCATIONAL STATISTICS
Division of Operations Analysis

EDUCATIONAL QUALITY: DEFINITION AND MEASUREMENT

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Technical Note
Number 4

September 2, 1966

CG 000 553

OFFICE OF EDUCATION/U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Educational Quality: Definition and Measurement[1/]

It is unfortunate that in a society which talks so much about the need for the best possible education for its youth we are forced by honesty to say that the evaluation of its educational processes and institutions is woefully behind the state-of-the-art. "Good schools," "excellence," "quality education" and other loose terms are bandied about without definition. If we attempt to cut through the semantics we find that the terms are operationally defined by the criteria used in their evaluation. To some, therefore, a "good" school system is one which has a highly paid staff and a low pupil-teacher ratio, to others it is one which has an active PTA, or one which is building new and beautiful structures, or one which is expending large sums of money on modern technical learning aids, or one which is introducing innovations in techniques, materials, and curricula. In short, it is assumed that the school which does something more than other schools is a better school. There is an obvious hiatus here between school practices, policies, and facilities which are considered beneficial and their actual effect upon the students. Little focus is put on the real educational output of the school, the level of educational attainment of the students; instead inappropriate headcounts, such as the number of students going onto prestige colleges, the number of Merit Scholars, the

1/ Adapted from a paper presented at the meetings of the American Statistical Association, Philadelphia, September 8, 1965

amount of scholarship funds awarded to the students, or in some cases, the average test scores of the school are used as criteria of school quality. And so the logical criterion measure of output, the amount of change or growth in the student himself brought about by the school is neglected. Under the egalitarian views of some of our educators, it is assumed that our schools do equally well for all students and develop them to the full extent of their potential--whatever that misunderstood and troublesome cliché means.

The school system should be evaluated, as any other operating system would be, by the efficiency of the system, measured in output per unit input within classifications of schools grouped according to their size, funds available, type, etc. In other words, compared to other similar schools how much "bang" is a school getting for its "buck." This is indeed a stark way of looking at the problem. We must discard descriptive characteristics of a school system as the valid criterion of what it accomplishes. Though chrome ornaments on an automobile add to its decorative appeal they in no way add to the performance of the vehicle itself; so too in education the performance of the system is the proper criterion, not its "good looks." But if indeed we wish to use the beauty of a school plant as a criterion measure let us do it, but let us not call the resulting scale "quality of education" or impute it to be a measure of what goes on inside the school.

It has been assumed that the more money a school spends the better it is. Only insofar as higher expenditures do indeed contribute to the educational attainment of the students, is per pupil expenditure a valid

criterion measure. In fact data has revealed that some schools with meager budgets are contributing more to the growth of the students than other less efficient, overrated schools with higher expenditures. The effects of other school characteristics, such as school policies and practices, upon student output must first be investigated before advocating school expenditure as valid measures of school quality.

Schools have many educational goals and outcomes, such as the ability to think and evaluate constructively and creatively, the appreciation of our democratic heritage, the acquisition of good habits and attitudes, etc., and specific criteria are needed for evaluating the schools effectiveness in meeting each of the defined objectives. For many of such goals we have not yet devised satisfactory measuring instruments. However, one major goal of the schools which is conceded by everyone is the acquisition of basic skills in the use of words and numbers. Since standardized achievement tests currently in use by the schools measure the level of student achievement in the various basic skills, they can be used as a criterion measure of the schools effectiveness in achieving this specific goal.

As hot as the "pursuit of excellence" has been in the past decade, the quarry has eluded us because the searching parties have been few and ill-equipped. The members of educational establishments have in the past been reluctant to evaluate themselves, today they are only slightly more receptive to the idea of finding out what is going on in the schools. They are concerned with the testing of students, and achievement test scores are, of course, proper criteria for the assessment of output of the schools; however, most schools unfortunately,

consider a perusal of the average test scores to constitute an evaluation of the school. Some school systems and States have even published local norm tables for various achievement tests with the bald statement that the norms were to be used to evaluate the quality of the schools without any recognition of the fact that the schools differed greatly in size, expenditure, staff, and facilities, and that they were educating students who differed greatly in their socio-economic status, family background, ability, motivation, and past preparation. Rarely have evaluations of schools been based on a sound research design which controlled in some way the variations in the characteristics of the school and the student body so that sensible comparisons between schools could be made. It is evident that only when such controls are used should there be an attempt to proceed to investigate the effect of the treatment variables, those characteristics of the schools which are thought to enhance educational attainment.

Of all the studies of school quality done in the past few are worth reporting. One of the better research studies has been the New York Quality Measurement Project. This project, started back in 1957 by the Division of Research of the New York State Education Department, selected 103 schools throughout the State for longitudinal investigation. I.Q. data were collected and various grades were tested for three consecutive years with a battery of achievement tests. Some limited school data were also collected on school size, socio-economic level, type of community, staff, and teacher training. Mort's "The Growing Edge," an instrument for measuring the adaptability of a school, the degree to

which a school employs modern instructional techniques, was also used as a criterion measure. Schools were then grouped by socio-economic level and community type for comparisons and separate norm tables were derived for these groups.

In this study a school's effectiveness in teaching the basic skills, measured by standardized achievement tests, was assessed by comparing its test results to those of other similar schools. After grouping the schools by communities which had similar characteristics there were, of course, still great differences in the educational attainment within each group. Also there were great differences in the expenditures of the schools. The amount of money spent by a school is only a rough measure of its quality level, and so it is easy to find schools with high expenditures which do not produce students with high achievement and similarly, we can find efficient low expenditure schools which turn out students with high achievement. In the New York study it was found, on closer examination, that the relative effectiveness of a school system varies with the I.Q. score of the student, the socio-economic level of the student, the subject matter content, and sex of the student. It is not simply a matter of one school being better than another, rather it is that one school does a better job with a particular type of student in a certain subject matter area. Schools have strengths and weaknesses in specific areas and are not simply universally good or bad.

One wishes, however, that more comprehensive input data on the students and school characteristics had been available in the New York study so that the analysis could be further refined. For then students

could be grouped, or controlled, by home background, attitudes toward school, etc. After having controlled student input we could go on to investigate and try to discover the important school characteristics which influence the attainment of the students. Just such comprehensive data is available in the Project TALENT Data Bank from their large 1960 study. Also, the Iowa Educational Information Center is now starting to collect interlocked comprehensive data on schools, including home background data, test scores, teacher data, and school data, which could be used in studies of school quality. The recent Educational Opportunities Survey has, of course, now become the basic source of comprehensive data for use in exploring the measurement of educational quality and in developing a model of educational attainment.

Two major studies of school quality underway at the present are worth mentioning. One is the Carnegie Assessment Project which is now in the stage of developing testing instruments to be used in a large nationwide study to measure the outcomes of the schools. Another study is the Pennsylvania Quality Education Project which is now nearing completion. This is an exploratory attempt to develop criteria of school quality and to assess measures and indices of these criteria.

Cost and quality are often discussed together. As I mentioned earlier, high expenditure does not insure quality in a school. It is evidently the judicious use of funds on factors contributing to the educational attainment of the student which is of import. It would be of great value to the Office of Education if we could determine the

relative effects of various possible alternatives for improving school quality. (And here we intend to use the concept of school efficiency as a measure of school quality.) For then we could make our decisions on the basis of the most efficient alternative which would give us the maximum educational output for a given resource or dollar expenditure.

In summary, the path ahead in the measurement of school quality leads to the very simple realization that in order to do this properly we must first specify our goals and determine the appropriate criterion measures, then we must control on relevent student and school characteristics. Because of the wide organizational variations in the schools throughout the nation it would be advantageous to group the schools by geographic region, type of school, school size, tax base, or any other meaningful classification. Also, because of the differential effects of school training the pupils need also be classified by sex, home background, attitudes, etc. By using such a procedure we can reasonably expect to improve our assessment of the schools.

END

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